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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/073,958	02/14/2002	Shigeo Kittaka	02410273AA	8293

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EXAMINER

CHOI, WILLIAM C

ART UNIT	PAPER NUMBER
2873	

DATE MAILED: 04/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/073,958	KITTAKA ET AL.
	Examiner	Art Unit
	William C. Choi	2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 14 February 2002.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-17 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-4, 7-12 and 15-17 is/are rejected.
 7) Claim(s) 5, 6, 13 and 14 is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Loha Ben
Loha Ben
 Primary Examiner

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 10 April 2002 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) The translation of the foreign language provisional application has been received.
 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
 4) Interview Summary (PTO-413) Paper No(s) _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statement filed February 14, 2002 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 15 (and dependent claim 16) recites the limitation "reflection surface" in line 3 of claim 15. Claim 15 is dependent on claim 2, which in turn is dependent on claim 1, where there is no mention of a "reflection surface". Therefore, there is insufficient antecedent basis for this limitation in the claim. For purposes of examination, claims 15 and 16 were taken to depend from claim 3, where the limitation

of a "reflection surface" is disclosed. Claim 16 is rejected due to its dependency on claim 15.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 10-12 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oleskevich (U.S. 5,701,373).

In regards to claims 1 and 2, Oleskevich discloses an optical coupling system (abstract and column 1, lines 7-13, Figure 2A) comprising: a first lens having an incident surface disposed in a certain direction and having a positive refractive power (column 3, lines 19-20, Figure 2A, "50"), by said first lens, Gaussian beam-like luminous flux incident on said incident surface from a light source (Figure 2A, re light entering "50") being converted into approximately parallel luminous flux (Figure 2A, re light between "50" and "60"), inherently having an incident surface and exit surface disposed in a reverse direction, this being reasonably assumed from the diverging and converging effects of the two lenses "50" and "60", respectively. Oleskevich further discloses whereby in said second lens, said approximately parallel luminous flux incident on said incident surface of said second lens is converted into converged luminous flux (Figure 2A, re light exiting "60"), said converged luminous flux being incident on a light-receiving

unit (column 2, lines 59-60, Figure 2B, "20") but does not specifically disclose wherein the second lens has the same refractive power as that of said first lens and the distance $2L$ between the two lenses is selected to be in a range given by the claimed expressions.

It has been held that in the recitation that it is not inventive to discover optimum conditions or workable ranges by routine experimentation and that this experimentation is no more than the application of the expected skill of an engineer. *In re Aller et al.* 105 USPQ 233. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the second lens to have the same refractive power as that of said first lens and the distance $2L$ between the two lenses to be selected to be in a range given by the claimed expressions, since *In re Aller et al.* recites that it is not inventive to discover optimum conditions or workable ranges by routine experimentation and that this experimentation is no more than the application of the expected skill of an engineer.

In regards to claims 10-12, Oleskevich discloses as set forth above, but does not specifically disclose said lens having a positive refractive power being a plano-convex lens or a sphere lens made of a homogenous material or wherein said lens has a grating lens surface. Examiner takes official notice that it is well known in the art to use homogenous plano-convex or spherical lenses or lenses with grating lens surfaces to couple optical fibers. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the lens having a positive refractive power of Oleskevich to be a homogenous plano-convex or spherical lens or lens with a grating

lens surface since it is well known in the art to use these types of lenses to couple optical fibers.

Regarding claim 17, Oleskevich discloses wherein the first lens is physically the same as the second lens (column 2, lines 61-62, Figure 2b, "50" and "60").

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oleskevich as applied to claim 1 above, and further in view of Trimmer et al (U.S. 2002/0057871 A1).

In regards to claims 8 and 9, Oleskevich discloses as set forth above but does not specifically disclose wherein said lens having a positive refractive power is a rod lens having a gradient index distribution in a direction of a radius or an optical axis thereof. Within the same field of endeavor, Trimmer et al teaches that it is well known in the art to have optical fibers coupled with a gradient refractive index (GRIN) lenses having a refractive index that varies along a radial axis of the light transceiving end of the device and/or along a longitudinal axis of the light transceiving end of the device (page 1, section [0002], last 6 lines).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for said lens of Oleskevich having a positive refractive power to be a rod lens having a gradient index distribution in a direction of a radius or an optical axis thereof since Trimmer et al teaches that it is well known in the art to have optical fibers coupled with a gradient refractive index (GRIN) lenses having a refractive index that varies along a radial axis of the light transceiving end of the device and/or along a longitudinal axis of the light transceiving end of the device.

Claims 3, 4, 7, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mooradian (U.S. 5,327,447).

In regards to claims 3 and 4, Mooradian discloses an optical coupling system (Figure 1a) comprising: a lens having a positive refractive power (column 3, line 19, Figure 1a, "14"), by said lens, Gaussian beam-like luminous flux incident on said incident surface from a light source being converted into approximately parallel luminous flux (Figure 1a, re light beam); and a reflection surface disposed at the rear of said lens so that said approximately parallel luminous flux is reflected by said reflection surface to return to said lens (column 3, line 19, Figure 1a, "16"), said returning luminous flux being converted by said lens into converged luminous flux which is incident on a light-receiving unit disposed in said light source and its vicinity (column 3, lines 22-25, Figure 1a, "16"); but does not specifically disclose wherein a distance L between said lens and said reflection surface is selected to be in a range given by the claimed expressions.

It has been held that in the recitation that it is not inventive to discover optimum conditions or workable ranges by routine experimentation and that this experimentation is no more than the application of the expected skill of an engineer. *In re Aller et al.* 105 USPQ 233. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the distance L between said lens and said reflection surface is selected to be in a range given by the claimed expressions, since *In re Aller et al.* recites that it is not inventive to discover optimum conditions or workable ranges by

routine experimentation and that this experimentation is no more than the application of the expected skill of an engineer.

Regarding claim 7, Mooradian discloses wherein said light source also serves as said light-receiving unit (column 3, lines 22-25, Figure 1a, "12") but does not specifically disclose an end surface of an optical fiber serving as said light source. Examiner takes official notice that it is well known in the art for laser light to be provided through an optical fiber. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for an end surface of an optical fiber to serve as a light source since it is well known in the art for laser light to be provided through an optical fiber.

Allowable Subject Matter

Claims 5, 6, 13, 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach a combination of all the claimed features as presented in claim 5: an optical coupling system as claimed specifically wherein said total coupling loss is not larger than 0.05 dB.

The prior art fails to teach a combination of all the claimed features as presented in claim 6: an optical coupling system as claimed specifically wherein said light source

and said light-receiving unit are constituted by end surfaces of optical fibers which are equal in mode field diameter to each other.

The prior art fails to teach a combination of all the claimed features as presented in claims 13 and 14: an optical coupling system as claimed specifically wherein an optical functional device is disposed at a midpoint between the two lenses in said optical coupling system.

Claims 15 and 16 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The prior art fails to teach a combination of all the claimed features as presented in claims 15 and 16: an optical coupling system as claimed specifically wherein an optical functional device disposed at a midpoint between the lens and the reflection surface.

Prior Art Citations

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sasaki et al (U.S. 5,986,788) and Chuang et al (U.S. 5,521,999) is being cited herein to show optical coupling systems having many of the structural limitations of that of the claimed invention. However, additional rejections would have been repetitive.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Choi whose telephone number is (703) 305-3100. The examiner can normally be reached on Monday-Friday from about 9:00 am to 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (703) 308-4883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

W.C.
William Choi
Patent Examiner
Art Unit 2873
March 31, 2003


Loha Ben
Primary Examiner